No. 733,493. PATENTED JULY 14, 1903.

B. H. LÖFFLER.

AUTOMATICALLY OPENING OR CLOSING SLIDING DOOR.

APPLICATION FILED MAR. 15, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

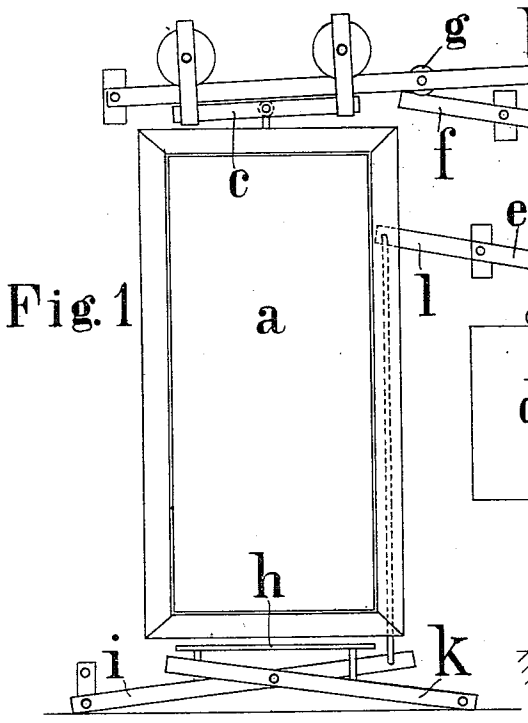

Fig. 1

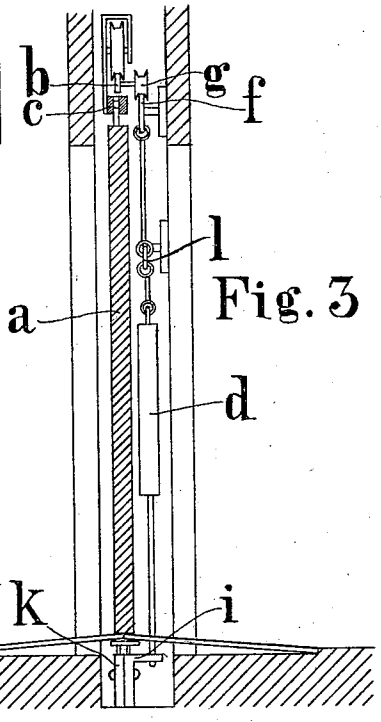

Fig. 3

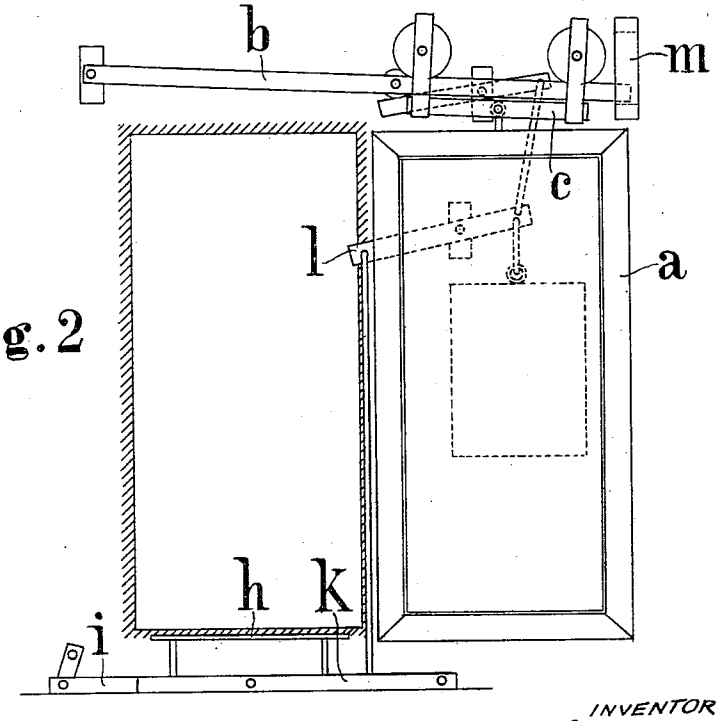

Fig. 2

WITNESSES.—
Ellis Owen
John Sinilli.

INVENTOR.
B. H. Löffler
by W. E. Edwards
Attorney.

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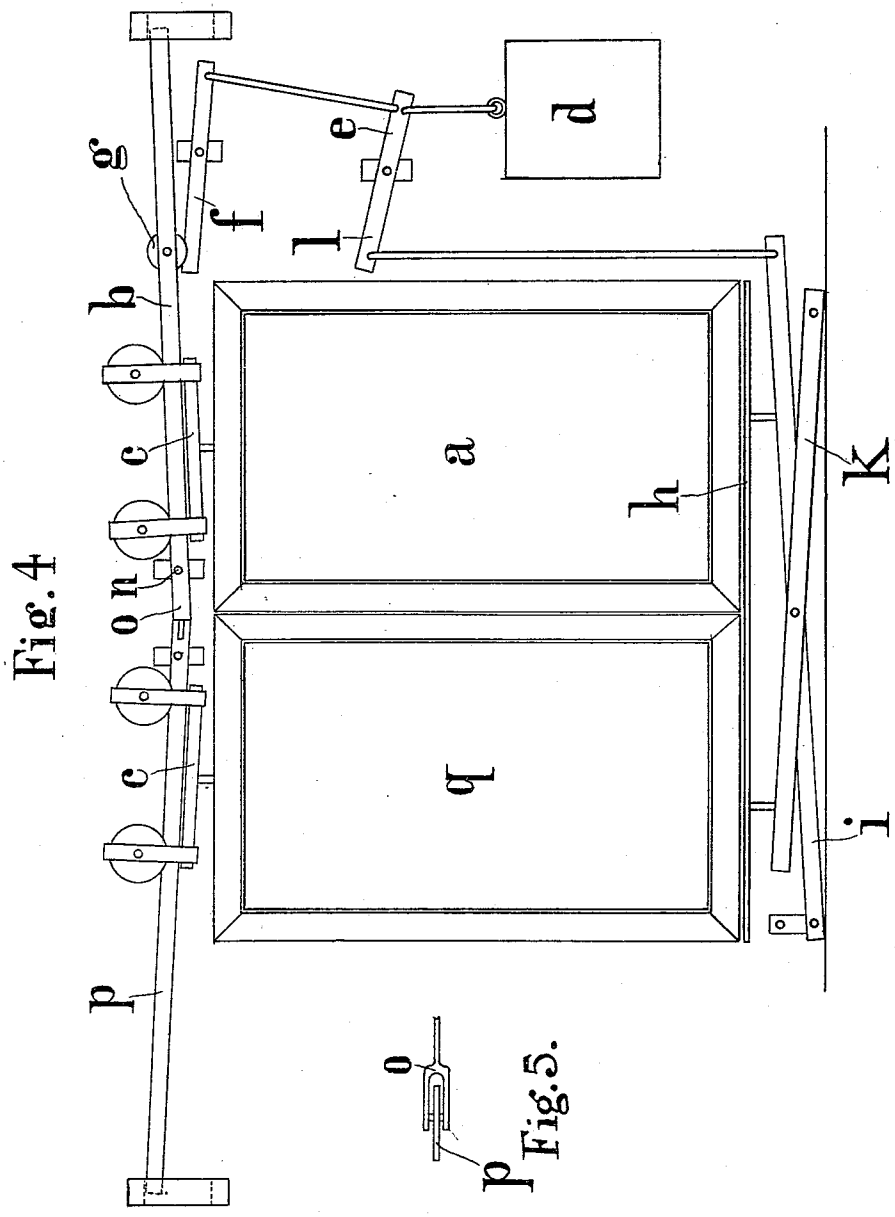

Fig. 4

Fig. 5.

WITNESSES.—
Ellis Owen
John Smith

INVENTOR.—
B. H. Löffler
by W. E. Edwards
Attorney.

No. 733,493. Patented July 14, 1903.

UNITED STATES PATENT OFFICE.

BERNHARD HEINRICH LÖFFLER, OF FRANKFORT-ON-THE-MAIN, GERMANY, ASSIGNOR TO JULIUS WIESBADER, OF FRANKFORT-ON-THE-MAIN, GERMANY.

AUTOMATICALLY OPENING OR CLOSING SLIDING DOOR.

SPECIFICATION forming part of Letters Patent No. 733,493, dated July 14, 1903.

Application filed March 15, 1902. Serial No. 98,408. (No model.)

To all whom it may concern:

Be it known that I, BERNHARD HEINRICH LÖFFLER, a subject of the German Emperor, residing at 38 Heinestrasse, Frankfort-on-the-Main, Germany, have invented certain new and useful Improvements Relating to Automatically Opening and Closing Sliding Doors, of which the following is a specification.

This invention relates to sliding doors which open automatically as soon as a person, a car, or a moving object approaches and close automatically again as soon as the person, car, or moving object has passed through the opening of the door.

According to the present invention the door is hung in a pendulum fashion upon a slide which moves upon a slide-bar, the latter being normally inclined in one direction and having the slide at its lower end with the door closed. Immediately on the approach of a person, a car, or other moving object the inclination of the slide-bar is reversed and the slide and the door pass away from the door-opening, the door automatically resuming its closed position by such means as a weight.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the apparatus. Fig. 2 is a front elevation corresponding thereto, but showing the door open. Fig. 3 is a sectional side elevation corresponding to Fig. 1. Fig. 4 is a front elevation of a modification in which the invention is shown applied to a double door, and Fig. 5 a detail plan view of the respective connected ends of the bars *b* and *p*.

In carrying the invention into effect, as illustrated in Figs. 1 to 3 of the drawings, a door *a* is provided and is hung on a pivot upon a bar *c*, upon which rollers or pulleys are provided, by which the bar *c* and the door *a* are capable of being laterally moved. The pulleys or rollers aforesaid ride upon a slide-bar *b*, one end of which is pivoted upon a fixed bracket, while the other is capable of being raised or lowered in a guide *m* to give the slide-bar an upward or a downward inclination, by which the door *a* slides into or out of its position to close the door-opening.

The slide-bar *b* is normally held in its upwardly-inclined position by means of a weight *d*. The weight *d* may conveniently be in the form of a plate and may be connected to the extremity of a lever *e*, whose opposite extremity *l* is connected by means of a link or chain to the operating lever or levers *i k*. The extremity of the lever *e* to which the weight *d* is connected is also connected to another similar lever *f*, disposed above the first lever *e*, and the opposite extremity of this lever *f* lies within the groove of a pulley *g*, mounted at a suitable point on the slide-bar *b*, previously referred to, so that by such means the weight *d* will normally maintain the slide-bar *b* in its upwardly-inclined position and the foot-plate *h* or other part of the operating mechanism also in its upper position.

The operating mechanism may conveniently consist of two levers *i k*, disposed beneath the doorway. These two levers *i k* are pivotally connected one to the other, and the lower extremity of the lever *i* is pivotally connected to a link, whose upper extremity is fixed, so that thereby the levers *i k* may be depressed upon the depression of the foot-plate *h*.

A foot-plate *h* is suitably connected to the respective upper extremities of the oppositely-disposed levers *i k* and is arranged in relation to the floor in such a manner that upon the approach of a person, car, or moving object it is depressed, whereby the oppositely-arranged levers *i k* are also depressed. One of these levers *i k* is connected by means of a chain or link to the lever *e*, carrying the weight *d*, as before described, so that on the depression of the foot-plate *h* the weight *d* is thus uplifted, and as the weight *d* thus no more maintains the slide-bar *b* in its upwardly-inclined position it descends into its downwardly-inclined position, so that thereby the sliding door *a* by its own weight slides backward on the slide-bar *b* and opens passage through the doorway.

Instead of arranging one sliding door *a*

two, such as *a q*, may be conveniently provided, as illustrated in Figs. 4 and 5, each door carried on a separate carriage or bar *c*, riding upon separate slide-bars *b* and *p*. The slide-bars *b* and *p*, however, may be extended, as at *o*, beyond the point at which they are pivotally fixed to their carrying-brackets, and these extensions *o* may be loosely pivoted one to the other, so that one weight *d* and foot-plate operating mechanism *h i k* may be employed to raise and lower one of the slide-bars *b* only, which slide-bar *b* causes the other slide-bar *p*, connected to it, to assume the same inclination as that which is given to it.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a sliding-door apparatus automatically operating on the approach of a person or body the combination of a door, a sliding carriage from which said door is hung, a slide-bar upon which said carriage slides, said slide-bar being pivoted at one end and being free to move at the other, a lever making contact with the free end of said slide-bar, a weight connected to the opposite end of said lever by means of which the free end of said slide-bar is normally held uplifted, and means for lowering the free end of the said slide-bar on the depression of a foot-plate, substantially as described.

2. In a sliding-door apparatus automatically operating on the approach of a person or body the combination of a door, a sliding carriage from which said door is hung, a slide-bar upon which said carriage slides, means for normally inclining the said slide-bar in one direction, means for reversing the inclination of said slide-bar, consisting of a foot-plate and two levers supporting said foot-plate the extremities of which are depressed on the depression of the foot-plate and means for connecting the extremities of one of said levers to another lever, one of the extremities of which latter lever makes contact with the slide-bar, substantially as described.

3. In a sliding-door apparatus automatically operating on the approach of a person or body the combination of a door, a sliding carriage from which said door is hung, a slide-bar upon which said carriage slides, means for normally maintaining said slide-bar inclined in one direction, consisting of two levers the corresponding extremities of which are connected together by means of a link and carry a weight, the opposite extremity of one lever making contact with the sliding bar, and means for uplifting the weight, such means being connected to the extremity of the second of the levers aforesaid, substantially as hereinbefore described.

4. In a sliding-door apparatus automatically operating on the approach of a person or body the combination of a door, a sliding carriage from which said door is hung, a slide-bar upon which said carriage slides, means for normally maintaining said slide-bar inclined in one direction, consisting of two levers, the corresponding extremities of which are connected together by means of a link and carry a weight, the opposite extremity of one lever making contact with the sliding bar, and means for uplifting said weight, said means consisting of a foot-plate, levers *i*, *k* connected thereto, and a link connecting the lever *i* to the second of the levers to which the weight is connected, substantially as hereinbefore described.

5. In a sliding-door apparatus automatically operating on the approach of a person or body, the combination of a door, a sliding carriage from which said door is hung, a slide-bar upon which said carriage slides, said slide-bar being pivoted at one end and being free to move at the other end, means for uplifting the free end by the agency of a weight and means for lowering said slide-bar consisting of a lever one of whose extremities lies in contact with said slide-bar, a foot-plate, and supporting-levers for said foot-plate, one of said supporting-levers being connected to the other extremity of the said lever, substantially as described.

6. In a sliding-door apparatus automatically operating on the approach of a person or body the combination of two doors sliding carriages to which said doors are connected, slide-bars upon which said carriages slide said slide-bars being connected together and inclined in reverse directions, means for reversing the inclination thereof consisting of a foot-plate and two levers supporting said foot-plate the extremities of which are depressed on the depression of the foot-plate and connections between said levers and said slide-bars, substantially as described.

7. In a sliding-door apparatus automatically operating on the approach of a person or body the combination of two doors, sliding carriages to which said doors are connected, slide-bars upon which said carriages slide, said slide-bars being connected together and being inclined in reverse directions, means for normally maintaining said slide-bars in one inclined position consisting of a weighted lever, means for operation on the approach of a person or body consisting of a foot-plate, and levers supporting said foot-plate, and means for connecting said levers to said slide-bars for reversing the inclination thereof on the depression of said foot-plate, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BERNHARD HEINRICH LÖFFLER.

Witnesses:
KARL BAIER,
JEAN GRUND.